

REMARKS

U.S. Patent No. 6,567,422 to Takeguchi, et al. does not disclose the invention claimed in the new claims 15-20. In particular it does not disclose the key distinguishing feature of the present invention, namely that of "setting the SID values of each port to the NE identifier values of the NE to which that port is directly connected". Takeguchi, et al. addresses the problem of timing loops in a totally different way to that claimed in the present application. According to Takeguchi, et al., source node identifiers are appended to the SSM clock-status message that is sent between nodes (see, col. 5, lines 24-30 and elsewhere). In other words, one node NE(a) inserts source identifier (SID) into the signal for use at a different node NE(b), NE(c), NE(d). The exchange of source identifiers in the manner proposed by Takeguchi, et al. causes many problems when applied to a practical communications network owing to the fact that most networks have many different NEs made by many different manufacturers. These manufacturers use different formats/conventions in generating identifiers and this results in severe incompatibility problems, and may render such networks unworkable and impractical. While the Takeguchi, et al. system could work in a single vendor network (where all the NEs are made by a single manufacturer or vendor), trying to apply the Takeguchi, et al. solution to multiple vendor networks would require significant additional effort in translating the identifiers, and this would need to be done every time a new piece of network equipment (NE) is added to the network.

According to the arrangement of Takeguchi, et al., a signal may be returned to its source before being marked as unusable (DNU) for synchronization. Stated differently, Takeguchi, et al. refers to source identifiers that contain the identity of an adjacent node to which that port is directly connected; these source identifiers are inserted into the signal by the sending node for use

at a different node of the network. There is no suggestion in the citation for a signal to be marked before it is returned to its source node, and the skilled person in the art would not have any incentive to modify the system of Takeguchi, et al. to operate in this way.

The present invention completely obviates all of the problems that the Takeguchi, et al. invention creates for itself. In the present invention, each output port checks signals sent for output at that port to see if the signal was received at an input port connected to the same node as that to which the output port is connected. If so, the signal is marked to prevent it being used for synchronization. The advantage is that the signal is marked before it is returned to the source node, thereby giving an earlier indication of the risk of forming a timing loop.

Unlike the prior art, in the present invention, the selection is based on identifiers obtained from the input ports at which the various synchronization signals are input to that node for use by that node. These port-based identifiers comprise the node identifiers of the adjacent source node from which the synchronization signal came. Furthermore, unlike the invention of Takeguchi, et al., in the present invention these port-based identifiers are supplied to each node by a central management system, and in contrast with the citation, the present invention inputs the port-based identifiers received by the receiving node into the receiving node for use within that node.

These features of the present invention lead to the improvement of avoiding a timing loop in the situation whereby two adjacent NEs are connected via more than one port, and also prevents the creation of timing loops between the nodes. It is these features that enable the present invention to overcome the limitation of the prior known systems, including the cited Takeguchi, et al. reference, of requiring that each and every node in the network support transport of information in a compatible way.

The present invention is capable of benefitting from the avoidance of creation of timing loops between nodes in a mixed network because the Source Identifiers SID ("port identifiers") required by a receiving node are inserted by the receiving node into the signal for use within that receiving node and not transported through the network to another node. The present invention controls the selection of a synchronization signal for output from the specific node.

Unlike the prior art, the selection is based on identifiers obtained from the ports at which the various synchronization signals are input to that node. These port-based identifiers comprise the node identifiers of the adjacent node from which the synchronization signal came from. Unlike the Takeguchi, et al. patent, these port-based identifiers are supplied to each node by a central management system.

Starting with the Takeguchi, et al. patent a skilled person would have to add or change the following three features to arrive at the invention set out in the proposed claims:

- Each output port of each NE comprising QLI means for setting the value of the QLI output at that port based on a comparison of the SID value of that port with the SID value of the selected synchronization signal input port.
- The SID value of each port comprising the NE identifier value of the adjacent NE.
- The management means comprises means for setting the SID value of each port of each NE to the appropriate NE value.

Regarding the first feature, the description and figures of Takeguchi, et al. contain no information about the arrangement of each port because they are not relevant to the invention of Takeguchi. To arrive at the present invention as set out in the proposed new claims, the skilled

person would be required to add the feature of the QLI means to each port of Takeguchi, et al. and to provide each QLI means with the functionality mentioned in the first bullet point above. Since there is no hint of this functionality in Takeguchi, et al., the skilled person would not be led to this feature.

Regarding the second bullet point above, the skilled person would need to realize that since a way of uniquely naming every NE in the network already exists (known in the prior art as "Node ID") these names could be used in place of the SID value. Use of the Node ID information leads to breaking the chain of information between adjacent NEs that further leads to the avoidance of the prior art. The skilled person would need to realize that this chain of information could be broken and would also need to realize that the SID value could be used to represent the "name" of the NE connected to each port. Again there is no hint in Takeguchi, et al. of this functionality, and in any case the person skilled in the art only becomes aware of these possibilities after reading the present application.

Regarding the third bullet point above, it is accepted that typical SDH and SONET systems have a central management function to perform general management duties. However, the central management function of Takeguchi, et al. would need to be provided with means for performing the tasks of the third bullet point. These tasks are not appreciated nor disclosed in Takeguchi, et al. and the skilled person would be required first to realize that these tasks could be performed, and secondly that they could be performed by the central management function. Takeguchi, et al. provides no suggestion of providing a management means with a further means to effect the functionality of the third bullet point. Accordingly, Takeguchi, et al. would not be helpful in assisting the skilled person in arriving at the solution set out in the third bullet point.

The technical problem to be solved by the present invention is set out on page 3, lines 1-2 of the specification. This problem is not hinted at in Takeguchi, et al. and accordingly, there is not the slightest incentive for the skilled person to modify the telecommunications system of Takeguchi, et al. to that of the present invention to solve a problem that was not appreciated by Takeguchi, et al.

Wherefore, a favorable action is earnestly solicited.

Respectfully submitted,

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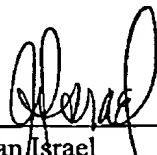
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